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1 (currently amended). A composite structure, comprising:
a substrate; and
a coating adjoined to the substrate, wherein the coating comprises
between 5 percent and 70 percent tantalum disilicide, between 1 percent and 30 percent molybdenum disilicide, and between 10 percent and 95 percent borosilicate glass.

2 (canceled).

3 (currently amended). The composite structure of claim 1, wherein ~~the~~ said coating further comprises a processing aid.

4 (currently amended). The composite structure of claim 3, wherein ~~the~~ said processing aid comprises silicon hexaboride.

5 (canceled).

6 (currently amended). The composite structure of claim 1, wherein a surface layer of the coating comprises ~~approximately 10% to 65%~~ between 10 percent and 65 percent tantalum disilicide, approximately 5% to 30% at least 5 percent molybdenum disilicide and approximately 20% to 45% between 20 percent and 45 percent borosilicate glass.

7 (currently amended). The composite structure of claim ~~[[5, wherein]]~~ 1, ~~further comprising~~ a sub-layer of the coating that comprises ~~approximately 20% to 60%~~ between 20 percent and 60 percent molybdenum disilicide and approximately 40% to 80% between 40 percent and 80 percent borosilicate glass.

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8 (currently amended). The composite structure of claim 7, wherein ~~the~~ said sub-layer impregnates a surface of ~~the~~ said substrate.

9 (currently amended). The composite structure of claim 8, wherein ~~the~~ said sub-layer impregnates ~~the~~ said surface of ~~the~~ said substrate to a depth of approximately 0.1 inches.

10 (currently amended). The composite structure of claim 1, wherein ~~the~~ said substrate is selected from the group consisting of a fibrous and open pore silica, silicon carbide, aluminosilicate, silicon oxycarbide and carbon substrates.

11 (currently amended). The composite structure of claim 1, wherein at least one component[[s]] of ~~the~~ said coating ~~have~~ has a particle size less than about 5 μm .

12 (currently amended). The composite structure of claim 1, wherein at least one component[[s]] of ~~the~~ said coating ~~have~~ has a particle size distribution having a maximum of approximately 5 μm and a mode of approximately 1 μm .

13 (canceled).

14 (currently amended). The composite structure of claim ~~[[13]]~~ 47, wherein the borosilicate glass comprises ~~approximately 90% to 99%~~ between 90 percent and 99 percent silicon dioxide and ~~1% to 10%~~ between 1 percent and 10 percent boron oxide.

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15 (currently amended). The composite structure of claim ~~[[13]]~~ 47, wherein the borosilicate glass comprises approximately 94.25 ~~[[%]]~~ percent silicon dioxide and 5.75 ~~[[%]]~~ percent boron oxide.

16 (currently amended). The composite structure of claim ~~[[13]]~~ 47, wherein the sub-layer comprises approximately 40 ~~[[%]]~~ percent of the coating.

17 (currently amended). The composite structure of claim 16, wherein the one or more second layers comprise approximately 60 ~~[[%]]~~ percent of the coating.

18 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein ~~the~~ said coating further comprises:

a first sub-layer applied to the substrate, wherein the sub-layer comprises approximately 20 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 77.5 ~~[[%]]~~ percent borosilicate glass; and

one or more second sub-layers applied over the first sub-layer, wherein each of the second sub-layers comprises approximately 60 ~~[[%]]~~ percent tantalum disilicide, 15 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 22.5 ~~[[%]]~~ percent borosilicate glass.

19 (currently amended). The composite structure of claim 18, wherein ~~the~~ said first sub-layer comprises approximately 40 ~~[[%]]~~ percent of ~~the~~ said coating.

20 (currently amended). The composite structure of claim 19, wherein at least a portion of ~~the~~ said first sub-layer impregnates a surface of ~~the~~ said substrate.

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21 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein ~~the~~ said coating further comprises approximately 50 ~~[[%]]~~ percent tantalum disilicide, 5 ~~[[%]]~~ percent silicon hexaboride and 45 ~~[[%]]~~ percent borosilicate glass.

22 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein ~~the~~ said coating further comprises:

a first sub-layer impregnating the substrate, wherein the sub-layer comprises approximately 55 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 42.5 ~~[[%]]~~ percent borosilicate glass; and

one or more second sub-layers applied over the first sub-layer, wherein ~~each~~ at least one of the second layer comprises approximately 45 ~~[[%]]~~ percent tantalum disilicide, 10 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 42.5 ~~[[%]]~~ percent borosilicate glass.

23 (currently amended). The composite structure of claim 22, wherein ~~the~~ said first sub-layer comprises approximately 40 ~~[[%]]~~ percent of the coating.

24 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein ~~the~~ said coating further comprises:

a sub-layer impregnating the substrate, wherein the sub-layer comprises approximately 55 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 42.5 ~~[[%]]~~ percent borosilicate glass; and

one or more second sub-layers applied over the first sub-layer, wherein ~~each~~ at least one of the second layers comprises approximately 40 ~~[[%]]~~ percent tantalum disilicide, 15 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 42.5 ~~[[%]]~~ percent borosilicate glass.

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25 (currently amended). The composite structure of claim 24, wherein ~~the~~ said first sub-layer comprises approximately 40 ~~[[%]]~~ percent of the coating.

26 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein ~~the~~ said coating further comprises:

a first sub-layer applied to ~~the~~ said substrate, wherein the first sub-layer comprises approximately 20 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 77.5 ~~[[%]]~~ percent borosilicate glass; and

one or more second sub-layers applied over the sub-layer, wherein ~~each~~ at least one of the second sub-layers comprises approximately 50 ~~[[%]]~~ percent tantalum disilicide, 20 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 27.5 ~~[[%]]~~ percent borosilicate glass.

27 (currently amended). The composite structure of claim 26, wherein ~~the~~ said first sub-layer comprises approximately 40 ~~[[%]]~~ percent of ~~the~~ said coating.

28 (currently amended). The composite structure of claim 27, wherein at least a portion of ~~the~~ said first sub-layer impregnates a surface of ~~the~~ said substrate.

29 (currently amended). The composite structure of claim ~~[[1]]~~ 47, wherein the coating further comprises approximately 10 ~~[[%]]~~ percent tantalum disilicide, 30 ~~[[%]]~~ percent molybdenum disilicide, 2.5 ~~[[%]]~~ percent silicon hexaboride and 57.5 ~~[[%]]~~ percent borosilicate glass.

30 (currently amended). A composite structure, comprising:

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a porous substrate selected from the group consisting of aluminosilicates and silicon/carbon compositions;

a first sub-layer applied to the porous substrate, wherein the sub-layer comprises molybdenum disilicide, silicon hexaboride and borosilicate glass and wherein the sub-layer impregnates a surface of the porous substrate; and

one or more second sub-layers applied to the first sub-layer, wherein each of the second layers comprises tantalum disilicide, molybdenum disilicide, silicon hexaboride and borosilicate glass.

31 (currently amended). The composite structure of claim 30, wherein ~~the~~ said structure is sintered at between approximately 2225°F and 2400°F.

32 (currently amended). The composite structure of claim 30, wherein ~~the~~ said structure is sintered at approximately 2225°F for approximately 90 minutes.

33 (currently amended). The composite structure of claim 30, wherein ~~the~~ said structure is sintered at approximately 2400°F for approximately 10 minutes.

34 (currently amended). The composite structure of claim 30, wherein ~~the~~ said tantalum disilicide, molybdenum disilicide, silicon hexaboride and borosilicate glass of ~~the~~ said first sub-layer and said one or more second sub-layers are each milled to have a maximum particle size of approximately 5 μ m.

35 (currently amended). The composite structure of claim 34, wherein ~~the~~ said tantalum disilicide, molybdenum disilicide, silicon hexaboride and borosilicate glass of ~~the~~ said first sub-layer and said one or more second sub-

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layers are each milled to have a particle size distribution having a mode of approximately 1 μm .

36 (currently amended). The composite structure of claim 30, wherein ~~the~~ said first sub-layer comprises approximately 20% to 60% molybdenum disilicide, 1% to 5% silicon hexaboride and 40% to 80% borosilicate glass.

37 (currently amended). The composite structure of claim 30, wherein at least one of ~~the~~ said second sub-layers comprises approximately 10 [[%]] percent to 65 [[%]] percent tantalum disilicide, 5 [[%]] percent to 30 [[%]] percent molybdenum disilicide, 1 [[%]] percent to 5 [[%]] percent silicon hexaboride and 20 [[%]] percent to 45 [[%]] percent borosilicate glass.

38 (currently amended). A composite structure, comprising:
a porous substrate selected from the group consisting of aluminosilicates and silicon/carbon compositions; and
a coating applied to the substrate, wherein the coating comprises between 10 percent and 65 percent tantalum disilicide, between 0 percent and 30 percent silicon hexaboride, between 1 percent and 5 percent silicon hexaboride, and between 30 percent and 60 percent borosilicate glass.

39 (currently amended). The composite structure of claim 38, wherein at least a portion of ~~the~~ said coating impregnates a surface of the porous substrate.

40 (currently amended). The composite structure of claim 39, wherein ~~the~~ said coating impregnates the said surface of the said porous substrate to a depth of approximately 0.1 inches.

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41 (currently amended). The composite structure of claim 38, wherein ~~the~~ said structure is sintered at between approximately 2225°F and 2400°F

42 (currently amended). The composite structure of claim 38, wherein ~~the~~ said structure is sintered at approximately 2225°F for approximately 90 minutes.

43 (currently amended). The composite structure of claim 38, wherein ~~the~~ said structure is sintered at approximately 2400°F for approximately 10 minutes.

44 (currently amended). The composite structure of claim 38, wherein ~~the~~ said tantalum disilicide, silicon hexaboride and borosilicate glass of ~~the~~ said coating are each milled to have a maximum particle size of approximately 5 μm .

45 (currently amended). The composite structure of claim 44, wherein ~~the~~ said tantalum disilicide, silicon hexaboride and borosilicate glass of ~~the~~ said coating are each milled to have a particle size distribution having a mode of approximately 1 μm .

46 (canceled).

47 (new). A composite structure, comprising:

a substrate;

a coating adjoined to the substrate, the coating comprising at least two of tantalum disilicide, molybdenum disilicide and borosilicate glass;

a first sub-layer, positioned between the substrate and the coating and impregnating the substrate, the sub-layer comprising approximately 55 percent

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molybdenum disilicide, 2.5 percent silicon hexaboride and 42.5 percent borosilicate glass; and

one or more second sub-layers applied over the sub-layer, wherein each of the second sub-layers comprises approximately 35 percent tantalum disilicide, 20 percent molybdenum disilicide, 2.5 percent silicon hexaboride and 52.5 percent borosilicate glass.